SMC®

9232DST

Ether 10/100™

Fast Ethernet EISA Adapter

10/100 Mbps Fast Ethernet performance for your EISA computer

User Guide

SMC®

Ether 10/100™
Fast Ethernet EISA Adapter
User Guide

SMC9232DST
For Shielded and Unshielded Twisted-Pair Cabling

Standard Microsystems Corporation
80 Arkay Drive
Hauppauge, New York 11788

Publication 79-000005-000

Information furnished by Standard Microsystems Corporation (SMC) is believed to be accurate and reliable. However, no responsibility is assumed by SMC for its use, nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SMC. SMC reserves the right to change specifications at any time without notice.

Copyright © 1995 by
Standard Microsystems Corporation
Hauppauge, New York.
All rights reserved. Printed in U.S.A.

Trademarks:
SMC and Standard Microsystems are registered trademarks; and Ether 10/100, EZStart, and SuperDisk are trademarks of Standard Microsystems Corporation. Other product and company names are registered trademarks or trademarks of their respective holders.

SMC®

LIMITED WARRANTY

SMC warrants its hardware and software products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from SMC or its Authorized Reseller:

Ether 10/100™ Adapters	Limited Lifetime
Driver Software	90 days

LIMITED LIFETIME: Ether 10/100 adapters have a standard three-year warranty. If you wish to extend your three-year warranty on these adapters to a lifetime warranty, please complete and return the enclosed product registration card within 90 days of purchase from SMC or its authorized reseller. Be sure to include the type and serial number of the computer in which the adapter was originally installed, and the serial number of the SMC Adapter (located on the board). Failure to complete and return this card does not affect the standard, three-year warranty. After registration, any defective SMC adapter will be repaired or replaced, at SMC's option, for as long as the adapter continues to be used in the computer in which it was first installed. The warranty covering all driver software is indicated below.

HARDWARE: If a product does not operate as warranted during the applicable warranty period, SMC shall, at its expense, correct any such defect by repairing the defective product or part or, at its option, by delivering to Customer an equivalent product or part to replace the defective item. All products that are replaced will become the property of SMC. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

SMC shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to SMC pursuant to any warranty.

SOFTWARE: SMC warrants that the software programs licensed from it will perform in substantial conformance to the applicable published program specifications for a period of ninety (90) days from the date of purchase from SMC or its Authorized Reseller. SMC warrants the magnetic media containing software against failure during the warranty period. No updates are provided. SMC's sole obligation hereunder shall be (at SMC's discretion) to refund the purchase price paid by Customer for any defective software products, or to replace any defective software products with products which substantially conform to SMC's applicable published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. SMC makes no warranty that its software products will work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the SMC software product documentation or specifications as being compatible, SMC will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by "bug" or defect in the third party's product.

WARRANTY SERVICE FOR HARDWARE PRODUCTS: Warranty service for hardware products may be obtained by delivering the defective product, accompanied by a copy of the dated proof of purchase, to SMC's Corporate Service Center or to an Authorized SMC Service Center during the applicable warranty period. Products returned to SMC's Corporate Service Center must be preauthorized by SMC with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid, insured, and packaged appropriately for safe shipment. The repaired or replaced item will be shipped to Customer, at SMC's expense, not later than thirty (30) days after receipt by SMC.

WARRANTY SERVICE FOR SOFTWARE PRODUCTS: Warranty service for software products may be obtained by telephoning SMC's Corporate Service Center or an Authorized SMC Service Center, within the warranty period.

WARRANTIES EXCLUSIVE: IF AN SMC PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, CUSTOMER'S SOLE REMEDY SHALL BE REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT SMC'S OPTION. THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES OF MERCHANTABLILITY AND FITNESS FOR A PARTICULAR PURPOSE. SMC NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

SMC SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLECT, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR, OR ANY OTHER CAUSE BEYOND THE RANGE OF INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

LIMITATION OF LIABILITY: IN NO EVENT, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE) SHALL SMC BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE, LOSS OF BUSINESS, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS, EVEN IF SMC OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow the exclusion of implied warranties or the limitation of incidental or consequential damages for consumer products, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights which may vary from state to state.

Standard Microsystems Corporation
80 Arkay Drive
Hauppauge, New York 11788
516.273.3100

TABLE OF CONTENTS

1 Introduction

100BASE-T Fast Ethernet Standard 1-1
Features 1-2
Package Contents 1-3
SuperDisk Contents 1-3
System Requirements 1-4
Adapter Description 1-5

2 Installing a Boot ROM

Installation Procedure 2-1

3 Configuring, Installing and Cabling the Adapter

Configuring the Adapter 3-2
    Using the EISA Configuration Utility and `!SMCA010.CFG` . 3-3
    `!SMCA010.CFG` EISA Configuration File Contents 3-4
Installing the Adapter 3-5
Connecting Your Network Cable 3-6
    Connecting an Unshielded Twisted-Pair Cable 3-7
    Connecting a Shielded Twisted-Pair Cable 3-8

4 Loading and Using EZStart

EZStart Navigational Keys 4-1
Installing EZStart 4-2
    Hard Disk Installation 4-2
    Windows Installation 4-3
Running EZStart 4-4
    In a DOS Environment 4-4
    In a Windows Environment 4-4

5 Testing the Adapter and Installing Network Drivers

Overview 5-1
Automatically Testing the Adapter and Copying a Network Driver With EZStart 5-2
Manually Installing a Driver 5-5

A Testing and Troubleshooting

Testing the Adapter A-1
  Basic Adapter Test A-2
  Two-Node Adapter Test........ A-3
Troubleshooting A-7
  Basics A-7
  Monitoring the Indicators........ A-8
  Copying Driver Files With EZStart........ A-8
  Replacing the Compressed `SMCInn.EXE` File........ A-8
Solving Network Problems A-9
  Cannot Connect to a File Server A-9
  SMC Driver-Related Error Messages A-10
  Adapter Problems After Adding a Device to Computer A-10

B Fast Ethernet Networking Guidelines

Cabling B-2
Connectors B-2
Topology........ B-2
  Repeaters B-3
  Connectivity Rules B-3

C Specifications

Adapter Specifications........ C-1
  General C-1
  Power Requirements........ C-2
  Environmental........ C-2
  Physical Dimensions C-2
Adapter Connectors and Indicators........ C-3
  Connector Pin Assignments........ C-4
    RJ-45 Connector C-4
    DB-9 Connector C-5
Software Option Settings........ C-6

Index

Compliances - Electromagnetic Emissions

FCC – Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment generates, uses, and can radiate frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If interference problems do occur, please consult the system equipment owner's manual for suggestions. Some of these suggestions include relocation of the computer system away from the television or radio or placing the computer AC power connection on a different circuit or outlet.

Change or modifications to this product without the express approval of SMC could result in non-FCC compliance, and void the user's authority to operate this equipment.

This product was tested and certified with a shielded/unshielded cable; depending on the availability of the port, therefore, an appropriate cable is to be used.

Canadian Department of Communications – Class B

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le ministère des Communications.

BMPT Vfg 243/1991

Hiermit wird bescheingt, dass {die Ether 10/100 Adapter Nr:SMC9232DST} in Übereinstimmung mit den Bestimmung der BMPT-AmtsblVfg 243/1991 funk-entstört ist. Der vorschriftsmässige Betrieb mancher Geräte (Z.B. Messender) kann allerdings gewissen Einschrankungen unterliegen. Beachten Sie deshalb die Hinweise in der Bedienungsanleitung.

Dem Zentralamt für Zulassungen in Fernmeldewesen wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf die Einhaltung der Bestimmungen eingeraumt.

Standard Microsystems Corporation, Hauppauge NY U.S.A. (or SMC GmbH München)

EN55022 (CISPR-22) – Class B

This device has been tested and found to meet the Class B limits of EN55022 (CISPR-22).

VCCI-2

This equipment is in the 2nd Class category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential area.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling.

この装置は、第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会(VCCI)基準に適合しております。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

Compliances - Product Safety

Standard	**Country**	**Authorization**
CSA 22.2 No. 950	Canada	Underwriters Laboratories, Inc. — Recognized
UL 1950	U.S.A.	Underwriters Laboratories, Inc. — Recognized
EN 60950	EC	TÜV Rheinland — Bauart Geprüft

Chapter 1

Introduction

SMC's Ether 10/100™ is a Fast Ethernet network adapter that runs at 10 Mbps or 100 Mbps. It works with EISA buses and connects to any 100BASE-TX compliant Ethernet hub to deliver ten times the bandwidth supported by 10BASE-T Ethernet. For 100 Mbps operation, the Ether 10/100 adapter supports operation on two pairs of Category 5 unshielded twisted-pair (UTP) cable or shielded twisted- pair (STP) cable. For 10 Mbps operation, the adapter supports Category 3, 4, or 5 UTP cable. The Ether 10/100 adapter is software-selectable between 10 and 100 Mbps operation, easy to install, software configurable, and compliant with both the IEEE 802.3 and ISO/IEC 8802-3 10BASE-T standard and the emerging Fast Ethernet 100BASE-TX standard.

100BASE-T Fast Ethernet Standard

The 100BASE-T standard describes three physical layers for 100 Mbps operation: 100BASE-TX defines operation over two-pair Category 5 unshielded twisted-pair (UTP) and shielded twisted-pair (STP) cable. 100BASE-T4 defines operation over four-pair Category 3, 4, and 5 UTP cable. 100BASE-FX defines operation over fiber. Ether 10/100 adapters are fully compliant with the 100BASE-TX physical layer component and the 100BASE-T standard.

Features

- Limited lifetime warranty with free technical support
- Compliant with both 10BASE-T (10 Mbps operation) and 100BASE-TX (100 Mbps operation) specifications of the IEEE 802.3 standard
- Utilizes EISA configuration file for automatic configuration and compatibility with other devices in your system
- SMC SuperDisk containing EZStart, PC Agent/SNMP, and a variety of drivers and support files for all popular network operating systems
- **EZStart:** This Windows-like utility makes adapter configuration, testing, and driver installation quick and easy.
- **PC Agent/SNMP:** This SNMP agent collects statistical and configuration information about your computer, your adapter, and the network, allowing your computer and adapter to be monitored by any SNMP Manager. For complete instructions regarding PC Agent/SNMP, refer to the `PCAGENT.DOC` file on the SuperDisk.
- 33 Mbytes/second data transfer capability using EISA burst cycles in DMA operation to enhance performance and minimize CPU utilization
- Software selection of DMA channel
- Automatic detection of UTP (RJ-45) or STP (DB-9) media interface
- Support for Category 3 or 4 UTP cable for 10 Mbps operation, Category 5 UTP cable for 10 Mbps or 100 Mbps operation, and STP cable (such as IBM Type 1 or equivalent) for 100 Mbps operation

- Diagnostic indicators (Link Integrity and Activity) mounted on bracket for easy viewing and troubleshooting
- Advanced UMAC/LMAC™ driver architecture assures the widest driver support available in today's LAN marketplace
- 128K packet buffer RAM for improved performance
- No switches or jumpers to set

Package Contents

- Ether 10/100 adapter
- SuperDisk diskette
- Ether 10/100 User Guide (This manual)
- Quick and EZ Guide
- Warranty Registration Card

Make sure you have received all of these items. If any item is missing or damaged, contact your place of purchase immediately. Please complete the Warranty Registration Card and return it to SMC.

SuperDisk Contents

The SuperDisk contains drivers and other files to make adapter configuration and testing and driver installation easy.

- `EZSTART.EXE` — EZStart utility
- `README.DOC` — contain instructions for installing and using EZStart. Also contains a list of supported Boot ROMs, as well as SMC technical support hours and telephone numbers.
- `!SMCA010.CFG` – EISA configuration file
- `PCAGENT.EXE` — PC Agent/SNMP utility

- `PCAGENT.DOC` file — contains instructions for installing and using PC Agent/SNMP.
- `SMCI`*`nn`*`.EXE` — The compressed driver file contains drivers for all major operating systems.
- Driver-installation files — contain installation instructions for a particular driver.
- Driver-release files — contain history information for a particular driver.

System Requirements

For your adapter — an EISA-bus computer with an available EISA bus slot, an EISA Configuration Utility diskette and documentation, Category 3 or 4 UTP cable for 10 Mbps operation, Category 5 UTP cable for 10 or 100 Mbps operation, or STP cable (such as IBM Type 1) for 100 Mbps operation.

For an optional Boot ROM — 8 KB of contiguous available memory space (between C000 to EE00, inclusive).

For EZStart — an MS-DOS, PC-DOS, or Windows operating system, v3.11 or later.

For PC Agent/SNMP — approximately 22 KB of additional RAM memory and an agent-compatible network driver (available on the SuperDisk). PCAgent/SNMP can be loaded into base memory (below 640 KB) or upper memory (between 640 KB and 1 MB).

Adapter Description

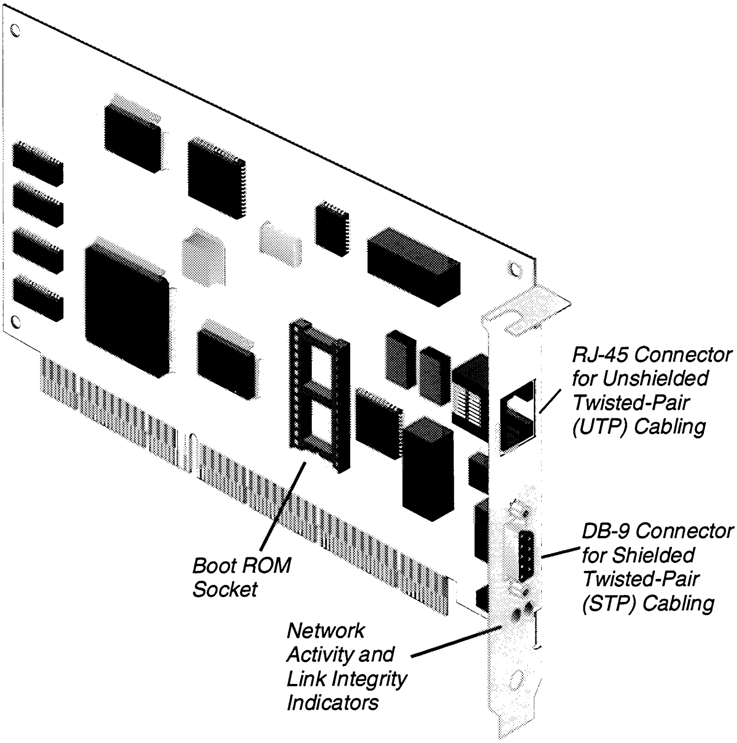
RJ-45 Connector for Unshielded Twisted-Pair (UTP) Cabling
DB-9 Connector for Shielded Twisted-Pair (STP) Cabling
Boot ROM Socket
Network Activity and Link Integrity Indicators

Figure 1-1.
Ether 10/100 Adapter Components

Chapter 2

Installing a Boot ROM

A Boot ROM allows your computer to load its operating system over the network, instead of from the computer's local hard disk. To obtain a Boot ROM, contact the dealer where you purchased your adapter.

Installation Procedure

Use extreme care when handling the Boot ROM and your adapter. Both devices contain sensitive components that are prone to damage from electrostatic discharge (ESD).

1. Discharge any static electricity from your body by touching a large, metal object.

2. Orient the Boot ROM so that its notch is on the same side as the notch on the adapter socket.

   Make sure the Boot ROM is properly oriented. If you install the Boot ROM backwards, it will be damaged.

3. Align the pins on the Boot ROM with the socket on your adapter and press the Boot ROM straight down until it is

firmly seated in the socket. Be careful not to bend any Boot ROM pins.

4. Refer to the manual that came with your Boot ROM and with your network operating system for additional instructions.

NOTE: *If you are using a memory management utility, such as EMM386 or QEMM, exclude an 8 KB RAM window for use by an adapter with a Boot ROM in your CONFIG.SYS file and,* ***before*** *running EZStart,* ***reboot*** *your computer. For example:*

```
DEVICE=C:\DOS\EMM386.exe X=D000-D1FF
```

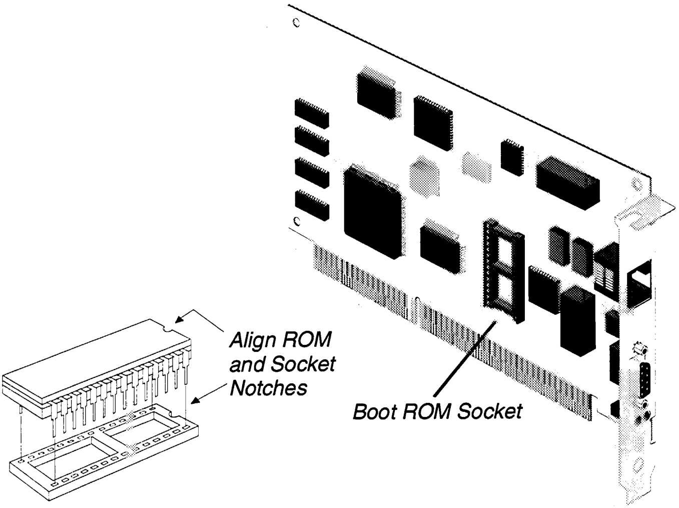

Figure 2-1.
Installing a Boot ROM

Chapter 3

Configuring, Installing and Cabling the Adapter

Once your SMC adapter is configured using the EISA configuration utility and installed in your computer, you can use unshielded or shielded twisted-pair cabling to connect to the network.

Before beginning any of the procedures described in this chapter, review the `README.DOC` file located in the root directory of the SuperDisk.

There are five steps to the configuration and installation procedure. It is recommended that you follow these steps in the order described to configure, install and cable your adapter.:

- EISA configuration (This chapter)
- Physical installation (This chapter)
- Network cable connection (This chapter)
- Network driver installation with EZStart (Chapters 4 and 5)
- Network operating system configuration (Driver-specific SuperDisk documentation)

Configuring the Adapter

The section describes how to use the EISA Configuration Utility (ECU) provided with your EISA bus computer to configure the Ether 10/100 adapter. The ECU determines which devices are connected to the system and automatically configures them for you. This process ensures that each device has its own system resources, such as Interrupt Request (IRQ) channel and memory address. The ECU uses the `!SMCA010.CFG` EISA configuration file provided on the SuperDisk when it configures the Ether 10/100 adapter. This file contains information about the adapter, such as board name, required resources and power consumption.

Use of the following installation procedure will help you avoid conflicts with ISA devices if you have both ISA and EISA devices in your computer. The Compaq ECU is used as an example. The procedure you would follow with your particular ECU may vary slightly from that described here. Refer to the user guide that came with your computer for greater detail.

In addition, SMC recommends that you:

- **Verify that the resources used by any ISA devices in your system (e.g., other LAN adapters, SCSI adapters, sound boards, etc.) are reported to the ECU.** The ECU can only detect EISA adapters installed in your system. It will not detect resources used by ISA adapters. If your system contains ISA adapters, make sure you report the resources used by those adapters to the ECU. Refer to your ECU documentation for details.
- Copy the ECU that came with your PC to a directory on your computer's hard drive to improve performance. ECUs can take up to 10 minutes to execute from a floppy disk.
- Copy the SMC-supplied EISA configuration file, `!SMCA010.CFG`, from the SuperDisk to the same directory as the ECU.

- Load a memory manager, such as `HIMEM.SYS`, so the ECU has enough memory to run properly.

Using the EISA Configuration Utility and `!SMCA010.CFG`

1. Run the ECU.

2. Select the option for adding an adapter, for example, *Add or Remove Board.*

3. Select a slot that you know is empty and press the Insert key. Make a note of the slot selected.

NOTE: *A common error is to insert the adapter into a slot other than the slot specified here. If this occurs, the system will report that the adapter was not found in* ***x*** *and found in* ***y****.*

4. When the list of EISA configuration files appears, select the file `!SMCA010.CFG`. This is the file you copied to your hard drive, using the same directory as specified for the ECU.

   If you did not copy `!SMCA010.CFG` prior to running the ECU, you can now load the file from the SuperDisk. Insert the disk into a floppy drive. When prompted for the EISA configuration file, specify the appropriate path. For example:

   `A:\!SMCA010.CFG.`

5. Proceed to the *View or Edit Details* screen and check the adapter settings. There are a variety of options you can specify, including line speed, IRQ, DMA channel, and ROM base address. Refer to the section titled `!SMCA010.CFG` EISA Configuration File Contents, or to page C-6, for a complete list of software resource option settings available for use by the Ether 10/100 adapter.

6. **Select the option that allows you to *Save the Configuration and Restart Computer.***

7. Proceed to *Installing the Adapter* (page 3-5).

`!SMCA010.CFG` EISA Configuration File Contents

The `!SMCA010.CFG` EISA configuration file provided on the SuperDisk is used by the ECU to configure the Ether 10/100 adapter. This file specifies a number of resources available for use by the Ether 10/100 adapter.

Line Speed

- Options are 100 Mbps (Fast Ethernet) and 10 Mbps (traditional Ethernet). For 10 Mbps operation, the adapter supports Category 3, 4, and 5 unshielded twisted-pair cable. For 100 Mbps operation, the adapter supports Category 5 unshielded twisted-pair cable or shielded twisted-pair cable (such as IBM Type 1).

IRQ (Interrupt ReQuest)

- Each I/O device in your computer must use a separate IRQ number. (Multiple devices *can* share level-triggered IRQs, however, the Ether 10/100 adapter supports only edge-triggered IRQs.) As long as all IRQs in use by other devices in your computer have been configured with the ECU (pay special attention to ISA devices), the ECU will automatically select a free IRQ for use by the Ether 10/100 adapter. Options are 10, 11, 15, 9, 3, 5, and 7 (all Edge Triggered), or Disable. Default is 10.

DMA (Direct Memory Access)

- The Ether 10/100 adapter uses DMA, a direct pipeline for I/O, for faster network access. You may have to change the default setting to avoid conflicting with some other card in your system, such as another network adapter, SCSI adapter, or sound board, that also uses DMA. DMA channels 1, 3, 5, 6, and 7 are free to be allocated to network adapters in most cases. Use channels 5 through 7 when possible, because they transfer 16 bits of data at a time and can handle up to 128 K of data in a single operation. If your computer does not use DMA, you can disable this option to operate in Fast I/O mode. Options are 7, 6, 5, 3, 2, 1, 0, and Disable. Default is 7.

ROM Base Address

- The Ether 10/100 adapter uses the ROM base address to transfer information between the Boot ROM and the host. Options are ROM Disable, C000h, C200h, C400h, C600h, C800h, CA00h, CC00h, CE00h, D000h, D200h, D400h, D600h, D800h, DA00h, DC00h, DE00h, E000h, E200h, E400h, E600h, E800h, EA00h, EC00h, and EE00h. Default is ROM Disable.

Installing the Adapter

After selecting the ECU option *Save the Configuration and Restart Computer*, the ECU will instruct you to turn off your computer and install the adapter. Switch off all computer system components, unplug the computer, and remove the computer cover.

Work in a static-free area and touch the computer chassis often to equalize static charges. Install the Ether 10/100 adapter into the slot specified during the EISA configuration process. EISA slots are deeper than ISA slots; make sure the adapter is completely seated so that no “gold fingers” are exposed. Refer to your computer manual for details.

Connecting Your Network Cable

Ether 10/100 adapters can be connected to 10BASE-T hubs (10 Mbps operation) using two pairs of Category 3, 4, or 5 unshielded twisted-pair (UTP) cable. They can be connected to 100BASE-TX hubs (100 Mbps operation) using two pairs of Category 5 UTP cable or shielded twisted-pair (STP) cable. (Only one cable-type can be installed.) The attached hub must be within the distance limitations specified by the applicable IEEE specification. For 100BASE-T, the maximum length of a twisted-pair segment (UTP or STP) is 100 meters.

Refer also to Appendix B for Fast Ethernet networking guidelines. Refer to Appendix C for a description of connector pin assignments.

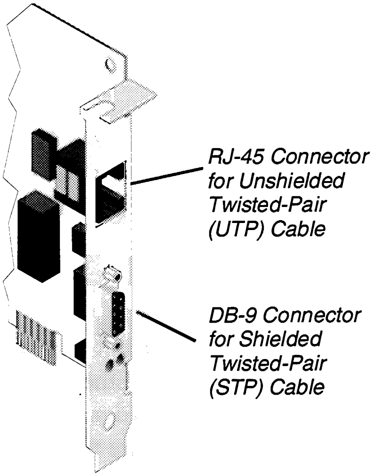
RJ-45 Connector for Unshielded Twisted-Pair (UTP) Cable
DB-9 Connector for Shielded Twisted-Pair (STP) Cable

Figure 3-2.
Adapter Connectors

Connecting an Unshielded Twisted-Pair Cable

Connection to a 10/100BASE-TX hub using UTP cable can be made directly, or indirectly via a wall outlet that has the proper wiring for an RJ-45 connector.

The UTP interface supports 10 Mbps operation on two pairs of Category 3, 4, or 5 UTP cable. It supports 100 Mbps operation on two pairs of Category 5 UTP only.

1. Attach the male RJ-45 connector on one end of a UTP cable to the adapter's RJ-45 port.

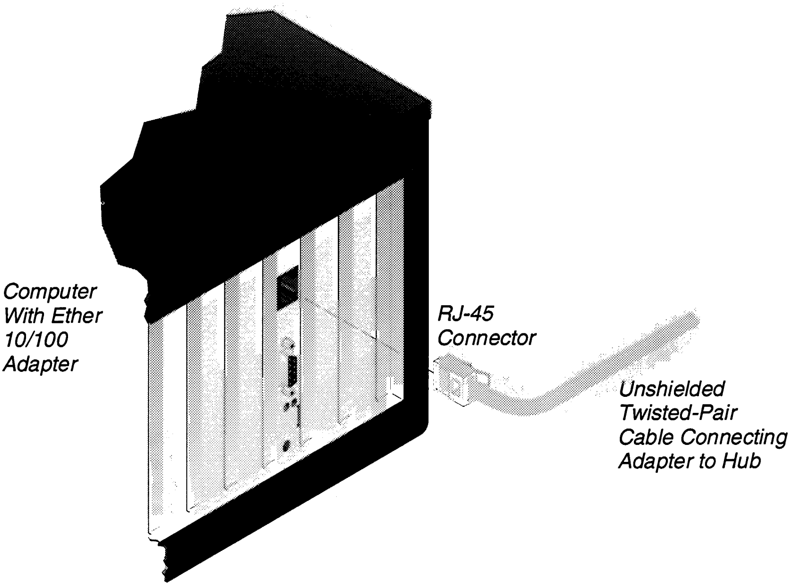
Computer With Ether 10/100 Adapter
RJ-45 Connector
Unshielded Twisted-Pair Cable Connecting Adapter to Hub

Figure 3-3.
Connecting an Unshielded Twisted-Pair Cable

2. Attach the male connector on the other end of the UTP cable directly to a 10/100BASE-T hub.

   OR

   Attach the male connector on the other end of the UTP cable to a wall outlet with an RJ-45 connector properly wired for Ethernet 10BASE-T or Fast Ethernet 100BASE-TX. Wiring from the wall outlet connection is usually routed to the hub through a punch-down block located in a wiring closet.

Connecting a Shielded Twisted-Pair Cable

Shielded twisted-pair cable can be used for 100 Mbps operation only. Connection to the adapter using STP cable is made using a DB-9 connector.

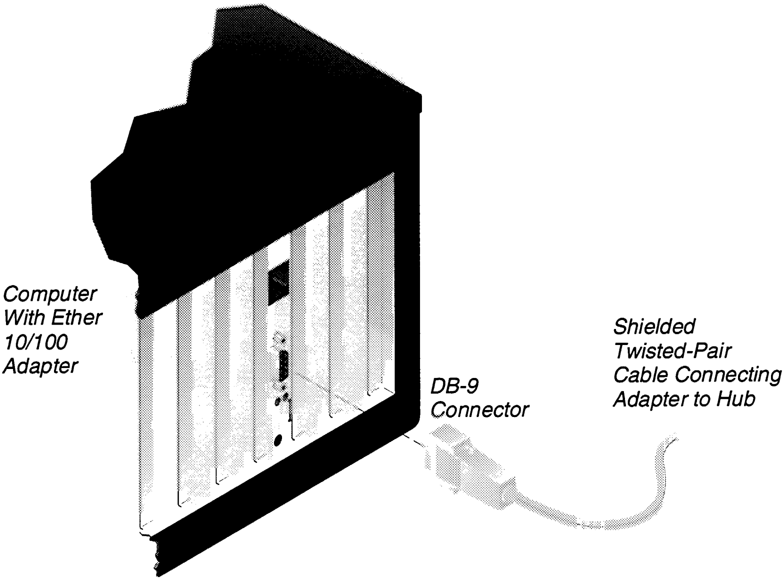

Figure 3-4.
Connecting a Shielded Twisted-Pair Cable

1. Attach the DB-9 connector on one end of the STP cable to the adapter's DB-9 port.

2. Attach the connector on the other end of the STP cable to a 100BASE-TX hub that supports STP-type cabling.

   OR

   Attach the connector on the other end of the STP cable to a wall outlet properly wired for Fast Ethernet 100BASE-TX. Wiring from the wall outlet connection is usually routed to the hub through a punch-down block located in a wiring closet.

After configuring, installing, and cabling the Ether 10/100 adapter, proceed to chapter 4 for directions about installing EZStart and chapter 5 for directions about using EZStart to test your adapter and install network drivers.

Chapter 4

Loading and Using EZStart

EZStart is a Windows-like utility provided on the SuperDisk. This multifunction utility takes the work out of driver installation and lets you test the adapter's basic functions. This chapter describes how to install and run EZStart in either a DOS or Windows environment.

EZStart Navigational Keys

EZStart provides a familiar Windows-like interface that can be accessed with a mouse or the keys listed below.

- Use **Tab** to move to the next field or button.
- Use **Shift+Tab** to move to the previous field or button.
- Use the **Enter** key or the **Spacebar** to select a highlighted function.
- Use the **Up** and **Down** arrows to move to selections in a list box.
- Press **F1** for help.

- Use **Alt+underscored character** to select a function that is not highlighted.
- Use **F3** or **Alt+F4** to exit.

NOTE: *When you see the "+" symbol between two keys, press and hold the first key while pressing and releasing the second. For example, for Shift+Tab, hold down the Shift key while pressing and releasing the Tab key.*

Installing EZStart

The EZStart utility can be run from the SuperDisk or the hard disk. EZStart can also be installed under Microsoft Windows and run by double-clicking on the EZStart icon.

Hard Disk Installation

To run EZStart under DOS without using the SuperDisk, or if you want to run it from your Windows desktop, load EZStart on your hard disk:

1. Insert the SuperDisk in a drive.
2. Using the DOS COPY command, copy all the files from the SuperDisk to a single directory on the hard disk. For example:

```
C:\COPY A:\*.* C:\SMC<Enter>
```

Windows Installation

1. Load EZStart on the hard disk as described at left.
2. Start Microsoft Windows.
3. From the Program Manager, select **New** in the **File** menu.
4. Select **Program Item.**
5. Select **OK.**
6. For the **Command Line** entry, type the complete path to the SuperDisk files and then type **EZSTART.EXE**. For example:

   `C:\SMC\EZSTART.EXE`

   NOTE: *If you prefer, you can use the EZSTART.PIF file instead of EZSTART.EXE for the* **Command Line** *entry and gain additional control over the environment in which EZStart loads. For more information on working with .PIF files, refer to the Microsoft Windows documentation.*

7. Select **Change Icon.**
8. Select **OK.**
9. Select **Browse** and then select the directory containing the EZStart utility.
10. Select the **EZSTART.ICO** file to install the icon on your Windows desktop.
11. Select **OK** with each window, until you return to your Windows desktop.

Running EZStart

In a DOS Environment

1. To run EZStart from the SuperDisk, insert the SuperDisk in a drive, select that drive, type EZStart, and press Enter. For example:

```
C:\>A:<Enter>

A:\>EZSTART<Enter>
```

2. To run EZStart from the hard disk, change to the directory on the hard disk containing the SuperDisk files, type **EZSTART**, and press Enter. For example:

```
C:\>CD SMC<Enter>

C:\SMC>EZSTART<Enter>
```

You will be presented with the EZStart main screen. This screen shows the current configuration information for your adapter.

In a Windows Environment

From your Windows desktop, double-click on the EZStart icon to start EZStart.

EZStart

You will be presented with the EZStart main screen. This screen shows the current configuration information for your adapter.

NOTE: *If multiple adapters have been installed, a screen displays each adapter with its configuration. Select an individual adapter by double-clicking on it, or by highlighting it and either choosing* **Select** *or pressing the* **Enter** *key. The EZStart Main screen will then appear.*

Proceed to Chapter 5 for directions on how to use EZStart to test the adapter and install network drivers.

Chapter 5

Testing the Adapter and Installing Network Drivers

You must install a network driver to allow the Ether 10/100 adapter to work with your network operating system. This chapter describes how to test the basic functionality of the Ether 10/100 adapter and install network drivers using EZStart. After copying a network driver and its associated files to your computer, follow the installation procedures from your SuperDisk documentation (network operating system-specific) to configure your networking software to use the driver.

Overview

SMC provides a broad range of network drivers and interface software, including drivers for NetWare (DOS and 32-bit ODI), OS/2 ODI, IBM OS/2 LAN Server, Microsoft LAN Manager, Windows NT, and many other network operating systems. These drivers, along with driver installation instructions, release information, and other supporting files, reside in the compressed file SMCInn.EXE, located in the root directory of the SuperDisk. The "I" denotes the Ether 10/100 adapter, and the "nn" indicates the SuperDisk version number.

NOTE: *The SuperDisk contains the latest drivers available at shipping time. If more recent versions of these drivers are available, you can download them from SMC's 24-hour Bulletin Board. Refer to the back cover of this User Guide for BBS numbers.*

There are two ways to copy driver files:

- Use EZStart to copy the driver and its supporting files automatically. (This procedure also allows you to test the basic functionality of the adapter.)
- Manually expand the entire set of drivers and supporting files, and select the ones you need.

Automatically Testing the Adapter and Copying a Network Driver With EZStart

1. Before running EZStart, make sure all device drivers for other products (such as other adapters, controllers, CD-ROM drives, etc.) are loaded.

2. Run EZStart. (Chapter 4)

3. Select **Automatic** from the EZStart main screen. EZStart performs the Basic Adapter Test and shows the results in the *Automatic Installation* screen.

4. You will be prompted to install a network driver. Select **Yes.** EZStart displays the *Network Drivers and Documentation Selection* screen.

NOTE: *To install a driver and skip the Basic Adapter Test, select* **Custom** *from the EZStart main screen, then select* **Drivers/Documents** *from the Custom Installation screen.*

5. Select your network operating system.

NOTE: *If you plan to use PC Agent/SNMP, you must select one of the following drivers:*

- NDIS DOS driver, SMC9232.DOS (v1.00 or later)
- DOS ODI driver, SMC9232.COM (v1.00 or later)

6. Select **OK.** A *Network Drivers and Documentation* screen appears for the driver you selected.

   EZStart suggests a destination directory consistent with the installation instructions for your network operating system. For example, for the DOS ODI driver, `C:\DOS_ODI` is the destination directory. In some instances, EZStart suggests you copy the driver files back to the SuperDisk or to an installation diskette. This facilitates later installation of the driver files as described in the associated driver installation document.

   EZStart also displays the names of associated files, such as the driver installation document (typically called `INSTALL.DOC`), the driver release document (`RELEASE.DOC`), and/or configuration files.

7. Either accept the default destination directory or enter a different one and select **Copy Files**. EZStart will automatically create the directory if it doesn't exist.

   The selected driver and associated files are copied to the destination directory.

8. When the message **Copy files completed** appears, select **OK**. If the driver you selected supports PC Agent/SNMP, you will be prompted to install it. To install the utility, select **Yes**. Otherwise, select **No** to return to the *Network Drivers and Documentation* screen. (Further instructions regarding PC Agent/SNMP are contained on the SuperDisk in the `PCAGENT.DOC` file.)

9. Select **Previous** until you are presented with the *Network Drivers and Documentation* screen.

10. Select **Documentation** from the *Network Drivers and Documentation* screen. A Document screen appears.

11. Select the **Document** drop-down box at the top-left area of the *Document* screen.

    A list of the documents and configuration files associated with the driver appears. The primary installation file for the driver is the first file in the list.

12. Select the document or file you want to view.

    You can also use a text editor or word processor to view and print driver configuration files and documents after the driver files are copied from the SuperDisk.

13. To print the file, first make sure the printer attached to LPT1 is on-line. Then select **Print** from the *Document* screen.

14. Exit EZStart.

Configuring Networking Software to Use the Driver

After installing a driver, you must configure your networking software to use it. The appropriate SuperDisk driver installation document (specific to the network operating system) describes how to perform this task.

After completing the installation and configuration, you must reboot your computer.

Manually Installing a Driver

With this method, you can manually expand all of the network drivers and supporting files from the `SMCInn.EXE` file on the SuperDisk to a directory on your hard disk. Then, you can decide which ones you need. (The manual installation procedure does not incorporate the Basic Adapter Test. Refer to Appendix A for information about adapter diagnostics.)

Make sure you have enough disk space available before expanding the drivers. Refer to the `README.DOC` file in the root directory of the SuperDisk to determine how much disk space is required.

1. Insert the SuperDisk in a drive and select that drive:

   ```
   C:\>A:<Enter>
   ```

2. Type the following at the command line and press Enter.

   ```
   A:\>SMCInn drive [\destination
   directory]<Enter>
   ```

   where:

   nn is the SuperDisk version number.

   drive is the drive to which the files are to be copied.

destination directory is the name of the subdirectory into which the files are to be stored.

For example:

```
A:\>SMCI10 c:\drivers<Enter>
```

If the destination directory is omitted, the files will be stored in the root directory.

3. View or print the driver installation document using a text editor or word processor.

Configuring Networking Software to Use the Driver

After installing a driver, you must configure your networking software to use it. The appropriate SuperDisk driver installation document (specific to the network operating system) describes how to perform this task.

After completing the installation and configuration, you must reboot your computer.

Appendix A

Testing and Troubleshooting

This appendix describes how to perform the Basic and Two Node Adapter Tests and troubleshoot adapter problems.

Testing the Adapter

EZStart can perform two different tests on the adapter to verify its functionality:

- Basic Adapter Test — verifies the operation of the adapter's basic functions.
- Two-Node Adapter Test — verifies the adapter's ability to communicate over the network with another adapter. At least one other computer containing an SMC adapter must be connected to the network. As long as the adapters are interfaced to an Ethernet (or Fast Ethernet) hub that supports 10/100 Mbps switching capability, the two-node test can be performed with a mixture of 10 Mbps and 100 Mbps adapters.

Basic Adapter Test

This test is actually a series of tests designed to check I/O Port Accessibility, on-board RAM, Network Controller Registers, Interrupt Generation, and Internal Loopback.

Running the Test

1. Run EZStart.

2. Select **Custom** from the EZStart main screen. You are presented with the Custom Installation screen.

3. Select **Basic**. The Basic Adapter Test screen appears and the test begins. When it completes, the result (either Passed or Failed) is listed alongside each test.

   NOTE: *After running the test, you can select* **Repeat** *to run the test continuously (such as overnight). To end a continuous test, press any key.*

   If your adapter fails any of the individual tests, click on **Help** for suggested remedies.

4. Select **Cancel** to return to the Custom Installation screen.

Two-Node Adapter Test

This test verifies that the network cable is connected correctly, so that the adapter can transmit and receive data.

The test requires at least two computers. One computer, configured as the *Initiator*, generates and sends test messages. One of the remaining computers, configured as a *Responder*, receives messages and transmits them back to the initiator. Results can be viewed on both the initiating and responding computers.

NOTE: *Run the Basic Adapter Test before running the Two-Node Adapter Test to ensure that the adapter's basic functions are working properly.*

Setting Up a Responder

1. Run EZStart.
2. Select **Custom** from the EZStart Main screen.
3. Select **Two Node**. The Two-Node Selection screen appears.
4. Select **Responder**. The Respond To Test Messages screen appears.

   The computer is ready to receive and retransmit messages. The numbers in the **Frames Received** and **Frames Transmitted** fields will be dynamically updated once the Initiator begins the test.

NOTE: *Repeat this procedure for all computers you wish to set up as Responders.*

Setting Up an Initiator

1. Run EZStart.
2. Select **Custom** from the EZStart main screen.
3. Select **Two Node.**
4. Select **Initiator**. The Initiate Test Messages screen appears.

NOTE: *You can configure several initiators which can all send frames to a single responder.*

Running the Test

1. From the Initiate Test Messages screen, use *one* of the following procedures to select a Responder.
   - Select **Find Responder** to allow EZStart to choose the first Responder that it finds. (Skip ahead to step 2.)
   - Select **Parameters** if a computer has not yet been set up as a Responder, or if you have set up several Responders and wish to specify a particular one. You will be presented with the Set Parameters screen. Enter the Destination Address (node address of the Responder) and click on **Ok**. You will return to the Initiate Test Messages screen. Refer to "Test Parameters," following, for more information about the Set Parameters screen.
2. Select **Start**. Two messages appear: **INITIATING TEST MESSAGES** and **Press any key to stop Initiator**. The **Frames Transmitted** and **Frames Received** fields are dynamically updated during the test.
3. Press any key to stop the test.

4. Select **Statistics** to view test results. You are presented with the LAN Statistics screen. Transmit statistics are listed on the left, and Receive statistics on the right.

What to Look For

An acceptable level of error statistics is impossible to define. This level varies depending on the size and configuration of your network, and the applications being run. For example, collisions naturally occur in Ethernet and Fast Ethernet networks. Acceptable levels vary with the number of nodes on each segment and the applications they are running. We recommend you consult your network administrator when reviewing the LAN Statistics screen.

Test Parameters

To display and/or change Two-Node Adapter Test parameters:

1. Select **Parameters** from the Initiate Test Messages screen. You are presented with the Set Parameters screen.

2. Make any required changes. Refer to Table A-1 for a description of each field.

3. Select **Ok** to return to the Initiate Test Messages screen.

Table A-1. Test Parameters Fields

Field	Description	Options (Range)
Frame Length	Size of packet to be transmitted.	64 bytes through 1,518 bytes, or varying (default).
Iteration	Number of times the test is to run.	1 to continuous. Default is 1,000.
Check Method	Method used to check that data received from Responder matches data that was transmitted.	**Compare** (default) Compares contents of each packet byte-by-byte. Slowest but most accurate method. **Checksum** Adds contents of each packet and compares results. Faster than Compare. **None** Does not check data.
Tx Retries	Number of times Initiator tries to retransmit data if no response is received.	Default is 2.
Rx Timeout	Time (sec.) Initiator waits for response before next retransmission.	
Destination Address	Node address of Responder. Required if a Responder has not been set up, or if several have been set up and you want to specify a particular one.	
Pattern	Data that Initiator repeatedly sends to Responder.	

Troubleshooting

Network problems are often caused by cabling errors, conflicts with other devices installed in the same computer, or software that has been configured incorrectly. This section provides a checklist and procedures that may help you pinpoint the source of the problem.

NOTE: *The SMC Ethernet Connectivity Brochure contains a great deal of information you may consider useful when troubleshooting. It is available via SMC's Elite-Fax system. To obtain a printed copy, call one of the numbers listed on the back cover of this user guide.*

Basics

- Make sure the cable is within the IEEE 802.3 and/or ISO/IEC 8802-3 Ethernet standard for the type of network you are using (10BASE-T vs. 100BASE-TX). (For 100 Mbps operation, the maximum workstation cable length is 100 meters.)
- Make sure the adapter is securely seated in the expansion slot.
- Make sure the network cable is securely attached to the adapter's connector.
- Make sure the correct network operating system driver is installed.
- Make sure the computer is receiving power. If you suspect the power outlet to be faulty, plug another device into it to verify that it is working. Check to see if the outlet is controlled by a wall switch.
- When using the EISA Configuration Utility (ECU), make sure the correct line speed (10 Mbps vs. 100 Mbps) has been selected. Refer to pages 3-3 and 3-4 for complete details.

- Make sure the speeds selected for the hub and adapter (10 Mbps vs. 100 Mbps) match.

Monitoring the Indicators

Ether 10/100 adapters have two indicators, shown on page C-3.

- **Network Activity Indicator** (Amber) — flashes to indicate network activity — the adapter is transmitting data to the network or receiving data from the network.
- **Link Integrity Indicator** (Green) — when lit, confirms there is an active connection between the adapter and a 10/100BASE-T hub.

  If this indicator is off, there is a problem with the connection between your adapter and hub. Check the network cable for cuts or splices. If that doesn't resolve the problem, try replacing the cable.

Copying Driver Files with EZStart

If you try to load a driver and DOS presents an error, the destination files may have a size of 0 bytes. Increase the value of the "FILES=" statement in your `CONFIG.SYS` file to at least 20. Then use EZStart to copy the driver files to your computer's hard disk again.

Replacing the Compressed `SMCInn.EXE` File

To replace the `SMCInn.EXE` file on the hard disk with an updated version:

1. Copy the current file to a diskette for safekeeping.
2. Delete the file from the hard disk.
3. Copy the new file to the directory containing the other EZStart files.

All the EZStart files and the `SMCI`*`nn`*`.EXE` file must reside in the same directory; otherwise EZStart cannot install drivers.

The letter “I” in this filename denotes the Ether 10/100 adapter, and the “*nn*” is the SuperDisk version number.

Solving Network Problems

This section describes common network problems and explains how to solve them.

Cannot Connect to a File Server

Verify that the adapter is properly installed and that the server is up and connected to the network. Then, verify that the frame type the driver is using (as specified in `NET.CFG`) is the same as that used by the server. If using multiple frame types, make sure the *first* one specified is the same as that used by the server.

Also note that an important step to perform when using the EISA Configuration Utility (ECU) to configure support for the SMC adapter is to specify the line speed (10 Mbps vs. 100 Mbps) to be used. If this step is not properly implemented, you may not be able to connect your adapter to a file server. Refer to pages 3-3 and 3-4 for complete details.

SMC Driver-Related Error Messages

Using EZStart, select **Documentation** from the *Network Drivers and Documentation* screen to view or print the appropriate driver-installation document. This document describes driver-related error messages.

Adapter Problems After Adding a Device to Computer

Make sure the SMC adapter and the new device have not been assigned identical addresses or interrupts. If necessary, reconfigure one of the devices.

Verify that the resources used by any ISA devices in your system (e.g., other LAN adapters, SCSI adapters, sound boards, etc.) are reported to the EISA Configuration Utility (ECU). The ECU can only detect EISA adapters installed in your system. It will not detect resources used by ISA adapters. If your system contains ISA adapters, make sure you report the resources used by those adapters to the ECU. Refer to your ECU documentation for details.

Appendix B

Fast Ethernet Networking Guidelines

This appendix contains an overview of Fast Ethernet (100BASE-T) topologies and migration scenarios.

SMC has prepared a *Fast Ethernet Technology Brief* to help you prepare for a smooth migration to high-speed communications. The technology brief contains more detailed information than this appendix, including information designed to help you design and configure your entire Fast Ethernet network. This appendix contains information relating specifically to Fast Ethernet adapters. The technology brief is available in glossy format by calling one of the numbers listed on the back cover of this user guide, or via SMC's fax-on-demand EliteFax system.

Cabling

Fast Ethernet is designed to run on cable plants that meet the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard. This standard defines both the types of cable that may be used and the manner in which buildings should be wired.

For 10 Mbps operation, the Ether 10/100 adapter supports Categories 3, 4, and 5 UTP cable. For 100 Mbps operation (100BASE-TX), only Category 5 UTP and STP cable are supported. Only two pairs of wire are required over this range of cable types.

Connectors

The connector for 100BASE-TX UTP is the same RJ-45 connector used with 10BASE-T, wired in exactly the same fashion. However, to support 100 Mbps operation, all intermediate connectors and the punchdown blocks used in the wiring closet must be Category 5 certified. The DB-9 STP connector and wiring are the same as used for Token Ring networks.

Refer to page C-4, for connector pin assignments.

Topology

Fast Ethernet networks are configured in a star topology, much like traditional Ethernet. The central component of a star is a multi-port repeater. Twisted-pair cabling distances from the wiring closet to the end user are identical for both technologies. Due to its increased speed, Fast Ethernet introduces new design rules that have to be followed.

Repeaters

For Fast Ethernet there are two distinct types of repeaters: Class I and Class II.

- A Class I repeater connects different physical media to the same collision domain, or translates line signals to MII signals. Only one Class I repeater can exist within a single collision domain, so this type of repeater cannot be cascaded.
- A Class II repeater connects identical media to the same collision domain. Each collision domain may contain at most a two-repeater cascade.

Connectivity Rules

The increased speed of Fast Ethernet requires adherence to the following design rules:

- The maximum length of a twisted-pair segment — distance from a repeater to a PC — is 100 meters, as specified by the EIA/TIA 568 wiring standard.
- The diameter of a collision domain — distance between two end-stations — is 205 meters (this figure may be modified when the standard is finalized).
- The collision domain must adhere to the SMC 3-2 or SMC 2-1 Rule: Between any two PCs or other stations on the network, there may be:
  - two segments and one Class I hub (SMC 2-1 Rule — refer to Figure B-1), or
  - three segments and two Class II hubs (SMC 3-2 Rule — refer to Figure B-2).

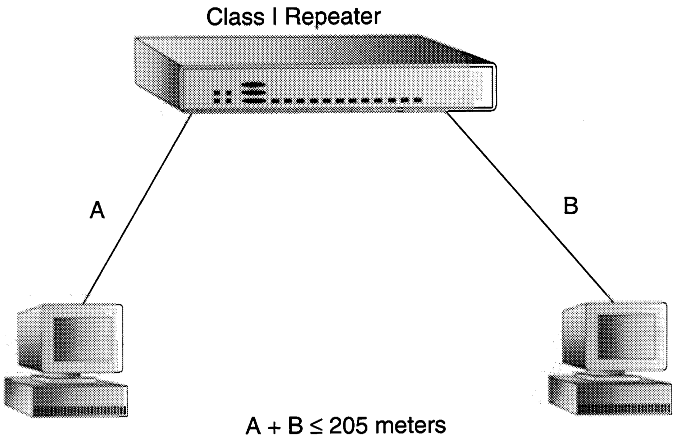

Figure B-1.
Fast Ethernet Collision Domain Guidelines
(SMC 2-1 Rule)

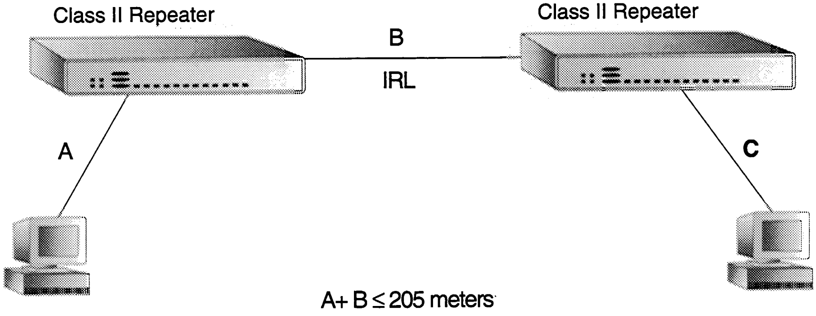

Figure B-2.
Fast Ethernet Collision Domain Guidelines
(SMC 3-2 Rule)

Appendix C

Specifications

Adapter

General

Hardware compatibility

IBM PC-compatible computer with an EISA bus

Software compatibility

NetWare, LAN Manager, OS/2 Extended Edition, LAN Server, DOS ODI driver, OS/2 ODI driver, NDIS driver, FTP TCP/IP, DEC Pathworks, UNIX, Banyan, Windows NT, Windows for Workgroups, and others

Standards supported

IEEE 802.3 and ISO/IEC 8802-3 10BASE-T and 100BASE-TX (unshielded and shielded twisted-pair) standards

Packet Buffer

128K RAM, 25 nsec

Power Requirements

Operating Voltage

+5 V DC +/- 5%

DC Power

Typical	4.5 W
Maximum	6.4 W

Environmental

Operating temperature (ambient)

32°F to 131°F (0°C to 55°C)

Storage temperature

-4°F to 158°F (-20°C to 70°C)

Operating humidity

10% to 90% (non-condensing)

Storage humidity

5% to 95% (non-condensing)

Physical Dimensions (Without Bracket)

Length X Width

7.0 inches X 4.3 inches
(178 millimeters X 109 millimeters)

Weight

4.8 ounces (134 grams)

Adapter Connectors and Indicators

- **RJ-45 connector** — small snap-in connector for unshielded twisted-pair cable. For 10 Mbps operation, this connector supports Category 3, 4, and 5 unshielded twisted-pair. For 100 Mbps operation, this connector supports Category 5 unshielded twisted-pair only.
- **DB-9 connector** — 9-pin connector for shielded twisted-pair cable (such as IBM Type 1 or equivalent). Supports 100 Mbps operation only.

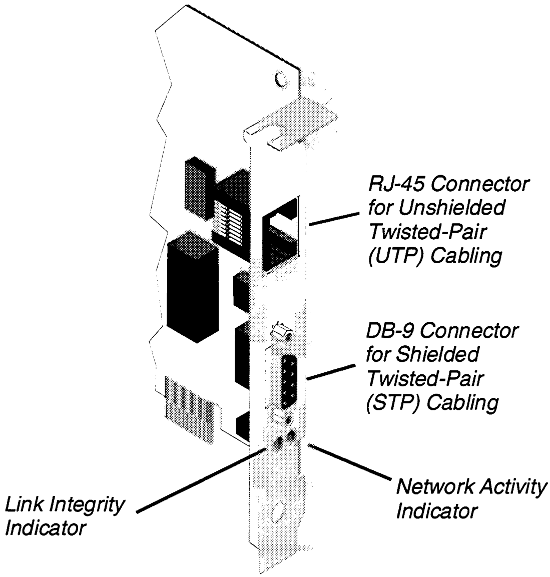
RJ-45 Connector for Unshielded Twisted-Pair (UTP) Cabling
DB-9 Connector for Shielded Twisted-Pair (STP) Cabling
Network Activity Indicator
Link Integrity Indicator

Figure C-1.
Adapter Connectors and Indicators

- **Network Activity Indicator** (Amber) — flashes to indicate network activity — the adapter is transmitting data to the network or receiving data from the network.

- **Link Integrity Indicator** (Green) — when lit, confirms there is an active connection between the adapter and a 10/100BASE-T hub.

Connector Pin Assignments

RJ-45 Connector

Table C-1 lists the pin assignments for the RJ-45 connector as shown below:

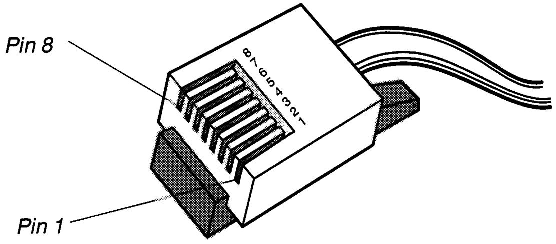

Figure C-2.
RJ-45 Connector Pin Arrangement

Table C-1. RJ-45 Connector Pin Assignments

Pin	Function	Pin	Function
1	Transmit +	5	Not used
2	Transmit -	6	Receive -
3	Receive +	7	Not used
4	Not used	8	Not used

DB-9 Connector

Table C-2 lists the pin assignments for the DB-9 (female) connector on the adapter.

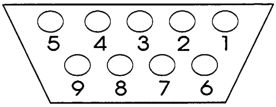

Figure C-3.
DB-9 Connector Pin Arrangement

Table C-2. DB-9 Connector Pin Assignments

Pin	**Function**	**Pin**	**Function**
1	Receive +	6	Receive -
2	Not used	7	Not used
3	Not used	8	Not used
4	Not used	9	Transmit -
5	Transmit +		

Software Option Settings

Table C-3. Ether 10/100 Adapter Option Settings

Option	**Default**	**Available**
Line Speed	100 Mbps	10 Mbps, 100 Mbps (10 Mbps on Cat 3, 4, and 5 UTP, 100 Mbps on Cat 5 UTP and STP.)
IRQ (Interrupt ReQuest) Channel	10	10, 11, 15, 9, 3, 5, 7 (all edge-triggered), or Disable
DMA (Direct Memory Access)	7	7, 6, 5, 3, 2, 1, 0, or Disable (Disable forces Fast I/O operation)
ROM Base Address	ROM Disable	C000h, C200h, C400h, C600h, C800h, CA00h, CC00h, CE00h D000h, D200h, D400h, D600h, D800h, DA00h, DC00h, DE00h E000h, E200h, E400h, E600h, E800h, EA00h, EC00h, EE00h

!SMCA010.CFG, 3-2
  contents, 3-4
10 Mbps vs. 100 Mbps, 3-4, A-7, A-9, C-6

A

Adapter
  components, 1-5
  configuration, 3-2
  conflicts, A-10
  connectors, C-3
  description, 1-5
  dimensions, C-2
  installation, 3-5
  not found, 3-3
  tests, A-1
Automatic driver installation procedure, 5-2
Automatic media detection, 1-2

B

Basic Adapter Test, 5-2, A-2
BBS, 5-2
Boot ROM, 2-1, 3-5
Bulletin board services, 5-2

C

Cable connections, 3-6
Cabling, B-2
Canadian Department of Communications, vii
Check method, A-6
Compliances
  electromagnetic emissions, vii
  product safety, viii
Compressed driver file, 5-1, A-8
Configuration
  network operating system, 3-1
Configuring
  adapter, 3-2
  networking software, A-9
Connecting
  network cable, 3-6
  STP cable, 3-8
  UTP cable, 3-7
Connectivity rules, B-3
Connectors, 1-5, B-2, C-3
Contents
  adapter package, 1-3
  EISA configuration file, 3-4
  SuperDisk, 1-3
Continuous testing of the adapter, A-2
Copying driver files, A-8
Custom driver installation, 5-2
Custom Installation screen, A-2

D

DB-9 connector, C-3
Destination address, A-4
Detection of media, 1-2
Dimensions, C-2
Direct Memory Access (DMA), 3-4
  operation, 1-2
Documentation screen, 5-4
Driver documents
  viewing and printing, 5-4
Driver files
  copying with EZStart, A-8
  disk space requirements, 5-5
  error messages, A-10
  manual copy procedure, 5-5
Driver installation
  Custom, 5-2

E

ECU, 3-2
EISA
  configuration file, 3-2
  configuration utility, 3-2
  slot, 3-3
Electromagnetic emissions, vii

- EliteFax, A-7
- Environmental specifications, C-2
- Error messages, A-10
- Ethernet connectivity brochure, A-7
- EZStart, 4-1, A-8
  - Basic Adapter Test, A-2
  - copy files, 5-2
  - Custom Installation screen, A-2
  - Documentation screen, 5-4
  - from a floppy disk, 4-4
  - from a hard disk, 4-4
  - hard disk installation, 4-2
  - icon, 4-4
  - installation, 4-2
  - installed under Microsoft Windows, 4-3
  - LAN Statistics screen, A-5
  - load from the hard disk, 4-2
  - loading, 4-2
  - Network Drivers and Documentation screen, 5-2
  - run from a floppy disk, 4-4
  - run from Microsoft Windows, 4-4
  - run from the hard disk, 4-4
  - running in a Windows environment, 4-4
  - running in DOS environment, 4-4
  - Set Parameters screen, A-5
  - using, 4-1
  - Windows installation, 4-3
- EZStart execution, 4-4
- EZStart keys, 4-1
- EZSTART.ICO, 4-3

F

- Fast Ethernet
  - cabling, B-2
  - connectivity rules, B-3
  - connectors, B-2
  - guidelines, B-1
  - repeaters, B-3
  - topology, B-2
- FCC Class B, vii
- Features, 1-2
- Frame length, A-6

G

- Guidelines for Fast Ethernet, B-1

H

- Hard disk installation, 4-2
- Hardware
  - compatibility, C-1
  - warranty, 1-3
- Humidity specifications, C-2

I

- Initiator, A-4
- INSTALL.DOC, 5-3
- Installation steps, 3-1
- Installing
  - adapter, 3-5
  - Boot ROM, 2-1
  - drivers automatically, 5-2
  - EZStart, 4-2
  - network drivers, 5-1
- Interrupt request (IRQ), 3-4
- Introduction, 1-1
- IRQ, 3-4
- ISA device conflict, 3-2
- Iteration, A-6

L

LAN Statistics screen, A-5
Latest drivers, 5-2
LEDs, A-8
Limited warranty, 1-3
Line speed, 3-4, A-7, A-9
Loading EZStart, 4-1, 4-2

M

Media detection, 1-2
Memory-management utility, 2-2
Multiple adapters, 4-5

N

Network
  cable, 3-6
  drivers, 5-1
  Drivers and Documentation screen, 5-3
  operating system, 5-3
  problems, A-9
No adapter found, 3-3

O

Operating temperature, C-2

P

Package contents, 1-3
Packet buffer, 1-3
Pattern, A-6
PC Agent/SNMP, 1-2, 5-3
PCAGENT.DOC, 1-2
Pin assignments, C-4
Power requirements, C-2
Problems with networks, A-9
Product safety compliances, viii

R

README.DOC, 3-1, 5-5
Receive statistics, A-5
Receive timeout, A-6
RELEASE.DOC, 5-3
Repeaters, B-3
Replacing SMCInn.EXE, A-8
Requirements, 1-4
  Power, C-2
Responder, A-3
RJ-45 connector, C-3
ROM base address, 3-5
Running EZStart, 4-4
Running the Basic Adapter Test, A-2
Running the Two Node Test, A-4

S

Set Parameters screen, A-5
Setting up a Responder, A-3
Setting up an Initiator, A-4
Shielded twisted-pair cable, 3-8
SMCInn.EXE, 5-1, A-8
Software
  compatibility, C-1
  warranty, 1-3
Solving network problems, A-9
Specifications, C-1
Specifying line speed, 3-4, A-7, A-9
Standards supported, C-1
Storage temperature, C-2
SuperDisk, 4-2
  contents, 1-3
  copying files, 4-2
  README.DOC, 5-5
System requirements, 1-4

T

Temperature specifications, C-2
Test messages, A-3
Test parameters, A-5
Testing the adapter, A-1
  continuous testing, A-2
  Two Node Test, A-3
Tests
  Basic, A-2
  Two-Node, A-3
Topology, B-2
Transmit retries, A-6
Transmit statistics, A-5
Troubleshooting, A-1, A-7
Two Node Test, A-3
  execution, A-4
  initiator setup, A-4
  parameters, A-6
  responder setup, A-3
  statistics, A-5
  test parameters, A-5

U

UMAC/LMAC driver
architecture, 1-3
Unshielded twisted-pair cable
connection, 3-7
Using EZStart, 4-1

W

Warranty, 1-3
Windows installation, 4-3

FOR TECHNICAL SUPPORT, CALL:

(8:30 AM - 8:00 PM Eastern Time)
(800) 992-4762 from U.S.A. and Canada
(516) 435-6250
(516) 434-9314 (Fax)

Bulletin Board Services (BBS)
Modem settings: 9600,8,n,1
New York: (516) 434-3162
Germany: 49 (89) 928806-50
France: 33 (1) 39.73.57.00
United Kingdom: 44 (0) 932 350681

INTERNET address is: techsupport@smc.com
Driver updates available from the internet:
Host name sjf-lwp.novell.com (IP address: 130.57.11.140)
SMC Forum on CompuServe: at the prompt (!) type: GO SMC.

FOR LITERATURE OR ADVERTISING RESPONSE CALL:

(800) SMC-4-YOU from U.S.A. and Canada
(516) 435-6255 in New York
(516) 273-1803 (U.S.A. Fax)
61.2.238.2206 in Australia
61.2.238.2220 (Australia Fax)
33 (1) 30.87.42.42 in France
33 (1) 30.61.41.34 (France Fax)
49 (89) 928806-0 in Central Europe
49 (89) 928806-30 (Central Europe Fax)
49 (89) 928791-0 in Eastern Europe/Middle East
49 (89) 9101934 (Eastern Europe/Middle East Fax)
65-320-8391 in Singapore
65-320-8359 (Singapore Fax)
44 (0) 932 350111 in the United Kingdom
44 (0) 932 350699 (United Kingdom Fax)
(305) 264-7657 in Latin America
(305) 264-8321 (Latin America Fax)
81 (3) 57212271 in Japan
81 (3) 57212270 (Japan Fax)
EliteFax (SMC's Fax-on-Demand System)
(800) SMC-8329 from U.S.A. and Canada
(516) 435-6107 Elsewhere

SMC®
STANDARD
MICROSYSTEMS
CORPORATION
80 Arkay Drive
Hauppauge, NY 11788

Printed on recycled paper.

Publication Number: 79-000005-000